

<b>DEPARTMENT OF HEALTH AND HUMAN SERVICES</b> PUBLIC HEALTH SERVICES FOOD AND DRUG ADMINISTRATION	<b>APPLICATION FOR A VARIANCE FROM 21 CFR 1040.11(c) FOR A LASER LIGHT SHOW, DISPLAY, OR DEVICE</b>	Form Approved: 0910-0025 Expiration Date October 31, 2000 See Page 4 for OMB Statement. <b>DOCKET NUMBER</b>
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**NOTE:** No laser light show, projection system, or device may vary from compliance with 21 CFR 1040.11(c) in design or use without the approval of this Application in accordance with 21 CFR 1010.4.

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<b>INSTRUCTIONS</b> 1. Check all applicable boxes and type or print the requested Information. 2. Submit an original and four (4) copies.	3. Mail your application to the Dockets Management Branch (HFA-305), Food and Drug Administration, Room 1-23, 12420 Parkland Drive, Rockville, MD 20852. 4. Enter Document Number if assigned.
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<b>1. NAME OF COMPANY</b> <b>MICRO DOT L.L.C.</b>		
<b>2. ADDRESS OF COMPANY</b> (Include ZIP CODE ) (If P.O. Box is used, include actual street address also.) <b>1036 Briar Way      Fort Lee, NJ      07024</b>		
<b>3. NAME AND TITLE OF RESPONSIBLE PERSON</b> <b>Michael Olla      ( President )</b>	<b>4. TELEPHONE NO.</b> (Include area code) <b>1-201-224-3627</b>	<b>5. DATE OF SUBMISSION</b> <b>05-01-2000</b>

**6. The applicant requests the variance to be in effect for a period of 2 years from the date of issue.**  
 (In general, the Agency will approve a Variance for only two years. If a longer period is requested, a justification must be attached as part of the application.)

<b>7. PRODUCT DESCRIPTION AND USE</b>
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<b>a. LIST NAME AND/OR MODEL NUMBER(S) FOR THE LASER LIGHT SHOW(S) AND PROJECTOR(S)</b> <b>MICRO DOT L.L.C.</b>	
<b>b. PRODUCT FOR WHICH A VARIANCE IS REQUESTED</b> <input type="checkbox"/> A LASER DISPLAY DEVICE <input type="checkbox"/> A PROJECTOR FOR A LASER LIGHT SHOW <input checked="" type="checkbox"/> A LASER LIGHT SHOW <input type="checkbox"/> OTHER (Specify) _____  <b>c. <input type="checkbox"/> PROJECTORS ARE INTENDED FOR RESALE, LEASE, OR LOAN TO OTHER LASER LIGHT SHOW PRODUCERS</b>  <b>d. PRODUCT IS INTENDED FOR USE IN A</b> <input checked="" type="checkbox"/> PLANETARIUM OR OTHER DOME PROJECTION STRUCTURE <input checked="" type="checkbox"/> THEATER <input checked="" type="checkbox"/> HOTEL/MOTEL BALLROOM OR MEETING ROOM <input checked="" type="checkbox"/> STORE DISPLAY <input checked="" type="checkbox"/> TRADE SHOW OR CONVENTION <input checked="" type="checkbox"/> DISCOTHEQUE OR NIGHT CLUB <input checked="" type="checkbox"/> PAVILION <input checked="" type="checkbox"/> INDOOR ARENA <input checked="" type="checkbox"/> OUTDOOR ARENA <input checked="" type="checkbox"/> MUSEUM <input checked="" type="checkbox"/> OUTDOOR UNENCLOSED AREA <input type="checkbox"/> OTHER (Specify) _____ <b>AS PER NOTIFICATION</b>  <b>e. PRODUCT IS INTENDED TO BE USED</b> <input type="checkbox"/> AT ONLY ONE (Fixed) Location <input checked="" type="checkbox"/> AT A VARIETY OF (Tour) LOCATIONS <input type="checkbox"/> OTHER (Specify) _____ <b>AS PER NOTIFICATION</b>	<b>f. PRODUCT IS INTENDED TO BE USED AT ANY ONE LOCATION</b> <input checked="" type="checkbox"/> MORE THAN 15 DAYS <input checked="" type="checkbox"/> MORE THAN 5 BUT NOT MORE THAN 15 DAYS <input checked="" type="checkbox"/> LESS THAN 5 DAYS  <b>g. TOUR IS INTENDED TO RUN FOR</b> <input type="checkbox"/> MORE THAN 6 MONTHS <input type="checkbox"/> 1-6 MONTHS <input type="checkbox"/> LESS THAN 1 MONTH <input checked="" type="checkbox"/> NOT APPLICABLE (Not a tour) <input type="checkbox"/> OTHER (Specify) _____ <b>AS PER NOTIFICATION</b>  <b>h. PRODUCT UTILIZES THE FOLLOWING LASER EFFECTS</b> <input checked="" type="checkbox"/> FRONT SCREEN PROJECTIONS <input checked="" type="checkbox"/> REAR SCREEN PROJECTIONS <input checked="" type="checkbox"/> HOLOGRAPHIC DISPLAYS <input checked="" type="checkbox"/> MULTIPLE REFLECTIONS/DIFFRACTION EFFECTS <input type="checkbox"/> AUDIENCE SCANNING (Also includes scanning any accessible uncontrolled areas) <input checked="" type="checkbox"/> REFLECTIONS FROM STATIONARY MIRRORS OR MIRRORED SURFACES (Beam Matrices) <input checked="" type="checkbox"/> STATIONARY IRRADIATION OF ROTATING MIRRORS BALLS, ETC. <input checked="" type="checkbox"/> SCANNING IRRADIATION OF ROTATING MIRROR BALLS, ETC. <input checked="" type="checkbox"/> FIBER OPTIC PROJECTIONS <input checked="" type="checkbox"/> FOG, SMOKE, OR OTHER SCATTERING ENHANCEMENT EFFECTS <input type="checkbox"/> OTHER (Specify) _____ <b>AS PER NOTIFICATION</b>

<b>8. LASER RADIATION LEVELS</b>		
<b>LASER MEDIUM</b> (Ar, He-Ne, ect.)	<b>WAVE LENGTHS</b> (nm)	<b>PEAK POWER</b> (Watts)
<b>KRYPTON</b>	<b>400 - 700nm</b>	<b>8 WATTS</b>
<b>ARGON / YAG</b>	<b>457.9 - 532 nm</b>	<b>40 WATTS</b>
<b>ARGON / KRYPTON ( WHITE )</b>	<b>457.9 - 676.4 nm</b>	<b>20 WATTS</b>

**9. IF ANY LASER RADIATION IS PULSED OR SCANNED, GIVE THE PULSE DURATION AND RATE AND SCANNING FREQUENCY AND AMPLITUDE**  
**SCANNING BAND WIDTH FROM DC TO 5 KHz MODULATION IN BOTH COLOR AND INTENSITY FROM DC TO 100 KHz.**

<b>10. REASON FOR REQUESTING VARIANCE</b>  <input checked="" type="checkbox"/> COMPLIANCE WITH THE LIMITS OF 21 CFR 1040-11(c) WOULD RESTRICT THE INTENDED USE OF THE PRODUCT BECAUSE COMPLIANCE WOULD LIMIT THE OUTPUT  <input type="checkbox"/> OTHER OR ADDITIONAL EXPLANATION (Specify)
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**11. MANNER IN WHICH IT IS PROPOSED TO DEVIATE FROM THE REQUIREMENTS OF THE APPLICATION STANDARD**

☒ IT IS PROPOSED TO DEVIATE FROM THE PROVISIONS OF 21 CFR 1040.11(c) IN THAT THE ACCESSIBLE EMISSION LEVEL WOULD EXCEED THE ACCESSIBLE EMISSION LIMITS SPECIFIED IN 21 CFR 1040.11(c0)

☐ IT IS PROPOSED TO DEVIATE FROM THE PROVISIONS OF 21 CFR 1040.11(c) AS FOLLOWS:

**12. ADVANTAGES TO BE DERIVED FROM SUCH DEVIATION**

☒ LASER LIGHT SHOWS AND DISPLAYS ARE ACCEPTED POPULAR MEDIA IN ENTERTAINMENT AND THE ARTS OF POWER LEVELS IN EXCESS OF THE LIMITS IMPOSED BY 21 CFR 1040.11(c) IS NECESSARY TO ACHIEVE THE REQUIRED EFFECTS IN THESE MEDIA.

☐ OTHER OR ADDITIONAL ADVANTAGES (describe and explain)

**13. EXPLAIN THE ALTERNATE MEANS OF RADIATION PROTECTION TO BE PROVIDED. (Check as many boxes as apply, in item 14 "Remarks," justify any boxes not checked, using additional sheets as necessary, State any other means of radiation that will be used.)**

- a. ☒ ALL LASER PRODUCTS, SYSTEMS, SHOWS, AND PROJECTORS WILL BE CERTIFIED TO COMPLY WITH 21 CFR 1040.10 AND THE CONDITIONS OF THIS VARIANCE AND WILL BE REPORTED AS REQUIRED BY 21 CFR 1002.10 AND 1002.12 USING THE REPORTING GUIDE PROVIDED FOR SUCH PURPOSE. THESE ACTIONS WILL BE ACCOMPLISHED PRIOR TO ANY INTRODUCTION INTO COMMERCE.
- b. ☒ EFFECTS NOT SPECIFICALLY INDICATED IN THIS VARIANCE APPLICATION WILL NOT BE PERFORMED, NO OTHER EFFECTS WILL BE ADDED UNTIL AN AMENDMENT TO THE VARIANCE HAS BEEN OBTAINED AND THE REQUIRED REPORTS OR SUPPLEMENTS, AS APPLICABLE, HAVE BEEN SUBMITTED.
- c. ☒ SCANNING, PROJECTION, OR REFLECTION OF LASER AND COLLATERAL RADIATION ( LIGHT SHOW RADIATION) INTO AUDIENCE OR OTHER ROLLED AREAS WILL NOT BE PERMITTED EXCEPT FOR DIFFUSE REFLECTIONS PRODUCED BY THE ATMOSPHERE, ADDED ATMOSPHERIC SCATTERING MEDIA, AND TARGET SCREENS.
- d. ☒ LASER RADIATION LEVELS IN EXCESS OF THE LIMITS OF CLASS 1 WILL NOT BE PERMITTED AT ANY POINT LESS THAN 3.0 METERS ABOVE ANY SURFACE UPON WHICH PERSONS OTHER THAN OPERATORS, PERFORMERS, OR EMPLOYEES ARE PERMITTED TO STAND OR 2.5 METERS BELOW OR IN LATERAL SEPARATION FROM ANY PLACE WHERE SUCH PERSONS ARE PERMITTED TO BE. OPERATORS, PERFORMERS, AND EMPLOYEES WILL NOT BE REQUIRED OR ALLOWED TO VIEW RADIATION ABOVE THE LIMITS OF CLASS 1 OR BE EXPOSED TO RADIATION ABOVE THE LIMITS SPECIFIED IN 21 CFR 1040.11(c).
- e. ☐ ANY PRODUCT WHICH RELIES ON SCANNING TO MEET ACCESS, EXPOSURE, OR PRODUCT CLASS LIMITS WILL INCORPORATE A SCANNING SAFEGUARD SYSTEM WHICH DIRECTLY SENSES SCANNER MOTION AND WHICH WILL REACT FAST ENOUGH TO PRECLUDE EXCEEDING THE APPLICABLE LIMIT
- f. ☒ ALL LASER LIGHT SHOWS SHALL BE UNDER THE DIRECT AND PERSONAL CONTROL OF TRAINED, COMPETENT OPERATOR(S). THE OPERATOR(S) WILL:
  - (1) IMMEDIATELY TERMINATE THE EMISSION OF LIGHT SHOW RADIATION IN THE EVENT OF ANY UNSAFE CONDITION;
  - (2) BE LOCATED WHERE ALL BEAM PATHS CAN BE DIRECTLY OBSERVED AT ALL TIMES; AND
  - (3) BE AN EMPLOYEE OF THE VARIANCE HOLDER WHO WILL BE RESPONSIBLE FOR THE TRAINING AND CONDUCT OF THE OPERATOR.
- g. ☒ THE MAXIMUM LASER PROJECTOR OUTPUT POWER WILL NOT EXCEED THE LEVEL REQUIRED TO OBTAIN THE INTENDED EFFECTS.
- h. ☒ THE PROJECTION SYSTEM (I.E., THE PROJECTOR AND ALL OTHER COMPONENTS USED TO PRODUCE THE LIGHTING EFFECTS) WILL BE SECURELY MOUNTED OR IMMOBILIZED TO PREVENT UNINTENDED MOVEMENT OR MISALIGNMENT, BEAM LIMITERS WILL BE PROVIDED AS AN INHERENT PART OF THE SYSTEM DESIGN TO PREVENT OVERFILLING OF SCREENS, BEAM STOPS, TARGETS, ETC.
- i. ☐ LASER PROJECTORS WILL NOT BE DELIVERED TO ANY OTHER PARTY UNDER AN AGREEMENT OF SALE, LEASE, OR LOAN UNLESS AND UNTIL THE RECIPIENT DEMONSTRATES THAT THEY HAVE A VARIANCE IN EFFECT AT THE TIME OF DELIVERY THAT PERMITS THEM TO PRODUCE LASER LIGHT SHOWS INCORPORATING SUCH PROJECTOR.
- j. ☒ IN ADDITION TO THE REQUIREMENTS OF 21 CFR 1040.10(h), THE MANUFACTURE OF LASER PROJECTORS/SYSTEMS WILL PROVIDE TO PARTIES WHO PURCHASE, LEASE, OR BORROW THE EQUIPMENT, ADEQUATE USER'S INSTRUCTIONS FOR SAFE INSTALLATION AND OPERATION AND WHICH EXPLAIN THE RESPONSIBILITY OF THE RECIPIENT AS AN INDEPENDENT LIGHT SHOW MANUFACTURER TO SUBMIT THE REQUIRED REPORTS AND APPLY FOR AND OBTAIN A VARIANCE FROM CDRH PRIOR TO INTRODUCTION INTO COMMERCE OF ANY LASER LIGHT SHOW.
- k. ☒ THE REQUIREMENTS OF 21 CFR 1002.30(a)(1) AND (2) WILL BE ACCOMPLISHED THROUGH THE USE OF WRITTEN PROCEDURES FOR SETUP, ALIGNMENT, TESTING, AND PERFORMANCE OF EACH SHOW. THESE PROCEDURES WILL BE IN SUFFICIENT DETAIL TO ENSURE COMPLIANCE WITH 21 CFR 1040.10, THE CONDITIONS OF THIS VARIANCE, AND THE CONTROL OF ACCESS TO RADIATION AREAS USING THE PROCEDURES DESCRIBED IN THE ANSI Z 136.1 STANDARD FOR THE SAFE USE OF LASERS ( AMERICAN NATIONAL STANDARDS INSTITUTE, 1430 BROADWAY, NEW YORK, NY 10018) OR ANY OTHER EQUIVALENT USER CONSENSUS STANDARD AND, WHERE APPLICABLE, STATE OR LOCAL REQUIREMENTS, LASER RADIATION RES WHICH CAN CONTAIN RADIATION LEVELS ABOVE THE LIMITS SPECIFIED IN 21 CFR 1040.11(c), WILL BE CLEARLY IDENTIFIED BY THE POSTING OF WARNING SIGNS AND/OR RESTRICTING ACCESS THROUGH PHYSICAL MEANS ( SUCH AS PRESSURE SWITCHES, PHOTOCCELL, BARRIERS, GUARDS, ECT.) THESE REQUIREMENTS APPLY TO TEMPORARY AREAS (SUCH AS DURING SET-UP AND ALIGNMENT PROCEDURES) AND TO FINAL OR PERMANENT AREAS, THE VARIANCE HOLDER WILL RETAIN THE RECORDS OF THESE PROCEDURES AND THE RESULTS OF ALL TESTS AS REQUIRED BY 21 CFR 1002.31, A COPY OF THE VARIANCE APPLICATION, THE APPROVAL LETTER, CURRENT PROCEDURES, AND RECORDS RELATING TO EACH PARTICULAR SHOW WILL BE WITH THE OPERATOR OR OTHER RESPONSIBLE INDIVIDUAL AND WILL BE MADE AVAILABLE FOR INSPECTION BY FDA AND OTHER RESPONSIBLE AUTHORITIES.

1. ☒ ADVANCE WRITTEN NOTICE WILL BE MADE AS EARLY AS POSSIBLE TO APPROPRIATE FEDERAL, STATE, AND LOCAL AUTHORITIES PROVIDING SHOW ITINERARY WITH DATES AND LOCATIONS CLEARLY AND COMPLETELY IDENTIFIED, AND A BASIC DESCRIPTION OF PROPOSED EFFECTS INCLUDING A STATEMENT TO THE MAXIMUM POWER OUTPUT INTENDED. SUCH NOTIFICATIONS WILL BE MADE, BUT NOT NECESSARILY BE LIMITED, TO;
- (1) THE CENTER FOR DEVICES AND RADIOLOGICAL HEALTH, OFFICE OF COMPLIANCE (HFZ-312), 8757 GEORGIA AVE., SILVER SPRINGS, MD 20910, PROVIDING THE INITIAL AND CLOSING DATES FOR FIXED INSTALLATIONS AND THE ITINERARY FOR MOBILE SHOWS. IN ADDITION, UNLESS ALL ASPECTS OF SUCH SHOW HAVE BEEN REPORTED AND THE ACCESSION NUMBERS CLEARLY REFERENCED, EACH NOTICE WILL INCLUDE DESCRIPTIONS OF EACH SHOW AND A LISTING OF ALL EFFECTS TO BE PERFORMED IN SUFFICIENT DETAIL TO CONFIRM COMPLIANCE WITH THE REGULATIONS AND THIS VARIANCE.
  - (2) THE FEDERAL AVIATION ADMINISTRATION (FAA) FOR ANY PROJECTIONS INTO OPEN AIRSPACE AT ANY TIME (I.E., INCLUDING SET-UP, ALIGNMENT, REHEARSALS, PERFORMANCES, ECT.). IF THE FAA OBJECTS TO ANY LASER EFFECTS, THE OBJECTIONS WILL BE RESOLVED AND ANY CONDITIONS REQUESTED BY FAA WILL BE ADHERED TO, IF THESE CONDITIONS CAN NOT BE MET, THE OBJECTIONABLE EFFECTS WILL BE DELETED FROM THE SHOW.
  - (3) STATE AND LOCAL RADIATION CONTROL OFFICES/AGENCIES FOR ALL SHOWS TO BE PERFORMED WITHIN THEIR JURISDICTIONS, ALL REQUIREMENTS OF STATE AND LOCAL LAW WILL BE SATISFIED AND ANY OBJECTIONS RAISED BY LOCAL AUTHORITIES WILL BE RESOLVED OR THE EFFECTS DELETED. (LISTS OF FEDERAL AND STATE OFFICES ARE AVAILABLE FROM THE CENTER FOR DEVICES AND RADIOLOGICAL HEALTH UPON REQUEST.)

14. REMARKS

**MICRCO DOT L.L.C. WILL ONLY USE EQUIPMENT FROM COMPANIES MANUFACTURING CDRH CERTIFIED PROJECTOR. FROM TIME TO TIME RENTAL EQUIPMENT WILL BE REQUIRED, IN THIS EVENT MARCO DOT L.L.C. WILL ONLY RENT CERTIFIED EQUIPMENT FROM COMPANIES WITH A PROPER CDRH RENTAL VARIANCE.**

**SAMPLE: PRECISION PROJECTION, LAS VEGAS LASERS, L.S.D.I or CERTIFIED PROJECTORS MANUFACTURED BY MICRCO DOT L.L.C.**

CERTIFICATION

I CERTIFY that all of the above information and statements are true, complete and correct to the best of my knowledge and acknowledge that my variance application may be denied or my variance may be revoked if this application is found to be false, misleading, or incorrect in any material way. I have submitted and will submit all reports by 21 CFR 1002.10 and 1002.12 on the laser equipment and show(s). I further understand that I may be required by regulation or by the Director, Center for Devices and Radiological Health, to supply such other information as may be necessary to evaluate and act on this application.

15. SIGNATURE:

16. NAME (type or print)  
**ROBERT J RUHL**

17. TITLE  
**SAFETY CONSULTANT**

## OMB STATEMENT

Public reporting burden for this collection of information is estimated to average .5 hours per response. Including the time for reviewing instructions. Searching existing data sources, gathering and maintaining the data needed, and completing reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to:

DHHS Reporting Clearance Officer

Paperwork Reduction Project 0910-0025

Hubert H. Humphrey Building, Room 531-H    <- **Please DO NOT RETURN this application to this address.**

200 Independence Avenue, SW.

Washington, DC 20201

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

# REPORT ON LASER LIGHT SHOW OR DISPLAY\*

## PART 1 IDENTIFICATION OF MANUFACTURER

### 1.1 Manufacturer

- a. Name of light show manufacturer: MARCO DOT L.L.C.
- b. Address: Street 1036 Briar Way  
City Fort Lee  
State New Jersey Zip Code 07024
- c. Area code and telephone (210 ) 224-3627

### 1.2 Importer (if applicable):

- a. Name of importer
- b. Address: Street  
City  
State Zip Code
- c. Area code and telephone ( )

### 1.3 Name, signature, and title of person preparing this report

- a. Name: **Robert J Ruhl**
- b. Signature: \_\_\_\_\_
- c. Title: **Safety Consultant**

\*

Information on laser projectors is to be submitted using "Guide for Preparing Initial Reports and Model Change Reports on Lasers and Products Containing Lasers," HHS Publication FI)A 86-8259.

## **PART 2**

### **IDENTIFICATION OF REPORT**

2.1 Is this report pursuant to paragraph (c) of 21 CFR 1002.61?  
(x)Yes ( )No

2.2 This report is

(x) an initial report

( ) a model change report

( ) a supplemental report

2.3 If this is a supplemental report, give CDRH accession number and date of the initial or model change report that it supplements.

Accession number: \_\_\_\_\_

Date: \_\_\_\_\_

2.4 Date of this report : \_\_\_\_\_

**PART 3**  
**SHOW NAME**

- 3.1 What is (are) the name(s) or the light show or display?

**PART 4**  
**VARIANCE**

- 4.1 Attach a copy of your variance application (FDA Form 3147) or, if approved, your variance approval letter (or variance number).

See Attachment to Part 4.1

**PART 5**  
**PROJECTION EQUIPMENT**

- 5.1 List each projector used in the light show by manufacturer, model number or other designation, and CDRH accession number for the projector if known.

<u>Manufacturer</u>	<u>Model or designation</u>	<u>CDRH accession number</u>
<u>Laser Scope</u>	<u>KT5-532</u>	<u>85V-0498</u>

**PART 6**  
**SHOW VENUE**

6.1 The laser light show or display takes place in:

- ☒ Planetarium or other dome projection structure
- ☒ Theater
- ☒ Hotel/Motel ballroom or meeting room
- ☒ Store displays
- ☒ Trade show or convention
- ☒ Discotheque or nightclub
- ☒ Pavilion
- ☒ Indoor arena
- ☒ Outdoor arena
- ☒ Museum
- ☒ Outdoor unenclosed area
- ☒ Other (specify)

**AS PER NOTIFICATION**

6.2 The laser light show or display takes place:

- ☒ at only one (fixed) location
- ☒ at a variety of (tour) locations
- ☒ Other (specify)

**AS PER NOTIFICATION**



## **PART 7**

### **SHOW LOCATIONS, DATES, TIMES**

- 7.1 Give specific location(s), date(s), and time(s) for the show, if known.\*

**AS PER NOTIFICATION**

## **PART 8**

### **SHOW EFFECTS PRODUCED**

- 8.1 The laser light show uses the following laser effects:

☒ front screen projections

☒ rear screen projections

☒ holographic displays

☒ multiple reflection/diffraction effects

☐ audience scanning, including scanning any accessible, uncontrolled areas

☒ reflections from stationary mirrors or mirrored surfaces

☒ stationary irradiation of rotating mirror balls or other mirrored shape

☒ scanning irradiation of rotating mirror balls, etc

☒ fiber optic projections

☒ fog, smoke, or other scattering effects

☒ other(specify)

**AS PER NOTIFICATION**

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\*see footnote 1 at the end of this Guide

## **PART 9**

### **DIAGRAMS AND DRAWINGS OF SHOW VENUE**

- 9.1 Provide both plan and elevation drawings with dimensions of the show or display. If the setup varies from show to show, then provide this information for a typical show. Include in the drawings the location of the projector(s) and control panel(s), audience, performer(s), operator(s), mirrors, mirror balls, display screens (or other targets), and beam termination points.

Show the direct and reflected laser radiation beam paths. Provide the laser radiation levels in each beam including the wavelengths, peak and average power, and scan parameters (if scanned) for the worst case from a human access point of view. Be sure the drawings indicate the minimum separations of the laser radiation fields (or beams) from reference locations in audience and performer areas in both vertical and horizontal directions, and any direct or reflected beams into audience or performer locations.

Drawings attached? ☒ Yes ( ) No (If "No," explain why)

**SEE ATTACHMENT TO PART 9.1**

## **PART 10**

### **LASER RADIATION LEVELS**

- 10.1 Describe how each of the laser radiation levels, indicated above, were determined. If any levels were derived from calculations rather than directly measured, provide the actual calculations that were made.

Description and calculations enclosed? ☒ Yes ( ) No.

**Our use of lasers and power levels for any display would fall within general light show industry normal levels and the capability of our existing equipment.**

**EXAMPLE'S :based on laser light show display and practices.**

- 1. Beam Effects from 2 to 40 Watts**
- 2. Screen effects from ½ to 2 Watts**

**All other effects would be at minimum power levels.**

## **PART 11**

### **SCANNING SAFEGUARDS**

- 11.1 Will there be audience scanning\* from any of the planned effects?

☐ Yes ☒ No

- 11.2 Do any of the planned effects require laser radiation (direct or scanned beams) to be viewed by operators, performers, or employees?

☐ Yes ☒ No

If the answer to either of the above questions is yes; describe how the radiation levels that reach into audience areas are maintained within the limits of Class I. If Class I limits are maintained by scanning, your description must include details of the required scan failure safeguard, including a discussion of the means of detection of the scanning, the theory of the operation of the scanning safeguard, and its speed of response.

Description attached? ☐ Yes ☒ No (If "No," explain why)

### **NOT APPLICABLE**

- 11.3 Will any laser radiation greater than Class I STRIKE BUT NOT BE VIEWED by operators, performers, or other employees?

☐ Yes ☒ No

If "Yes," describe, in detail, the operation of the scan failure safeguard or other means which will prevent exposure to beams exceeding Class II. If a scan safeguard is used, include a discussion of the detection of scanning, the theory of operation, and the speed of response of the safeguard. If other means are used, such as pressure pads or infrared beams, describe in detail as well.

Description attached? ☐ Yes ☒ No (if "No" explain why)

### **NOT APPLICABLE**

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\*see footnote 2 at the end of this Guide

## PART 12

### OPERATOR CONTROLS

12.1 Is the show under the continuous control of an operator? ☒ Yes ( ) No

12.2 Does the laser operator perform tasks in addition to operation of the laser projector?

☒ Yes ( ) No (If "Yes," describe those tasks)

**Equipment maintenance, equipment alignment, equipment set-up.**

12.3 Can the operator see all the propagating beam paths, their terminations, and the audience at all times during the performance?

☒ Yes ( ) No (If "No," explain how adequate surveillance is provided)?

12.4 Do any other personnel assist in providing surveillance of the laser display?

☒ Yes ( ) No

If "Yes;" state number of persons, their identification, and how they assist in providing surveillance.

Information attached? ☒ Yes ( ) No (If "No," explain why)

**Operator's assistant, Staff from the laser show venue will be enlisted if necessary and if available, to assist the operator with observing effects the operator may not be able to see directly.**

12.5 What qualifications are required of laser operators for your show?\*

**All operators will be familiar with laser hazards, safety regulations, and have no less than 4 weeks training.**

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\* see footnote 3 at the end of this Guide

## **OPERATOR CONTROLS (Continued)**

- 12.6 If your show is not under the continuous control of an operator, is a person designated to be responsible for the immediate termination of the laser radiation in the event of equipment malfunction, audience unruliness, or other unsafe conditions?

(x) Yes ( ) No ( ) Not applicable  
(If "No," explain alternate control)

- 12.7 How is this person designated? What are his or her other duties?

**NOT APPLICABLE**

- 12.8 What qualifications are required of this person?

**NOT APPLICABLE**

## **PART 13 PROJECTION EQUIPMENT CONTROLS**

- 13.1 Are one or more readily accessible controls provided to immediately terminate laser radiation?  
(x) Yes ( ) No

**Number of controls: 3**

- 13.2 Describe the location of these controls and their operation relative to your show.

**Control #1. Beam Attenuation on the projector**

**Control #2. Key Switch on the projector**

**Control #3. Key Switch on the laser power supply**

**PART 14**

**TEST PROCEDURES**

14.1 Attach a copy of the written setup, alignment, and test procedures to be followed prior to the operation of the laser light show at each location (see sample checklist for laser light shows in Appendix).

Procedures attached? ☒ Yes    ☐ No (If "No," explain why)

**SEE ATTACHMENT TO PART 14.1**

14.2 When are these setup, alignment, and test procedures performed?

**Before all shows**

14.3 What laser radiation levels are used during setup, alignment, and checkout?

**150 milliwatt    Approximated or at the lowest possible power level of equipment being used.**

14.4 Is a record of the results of the setup, alignment, and test procedures maintained?

☒ Yes    ☐ No

If "No," explain how adequate quality assurance is maintained.

NOTE: Adequate record keeping would include, but not be limited to: (1) sketches showing the location of the laser projector(s), operator(s), performer(s), audience, beam paths, viewing screens, wall mirrors, mirror balls, and other surfaces that may be struck by the laser beams; (2) information on scanning patterns, velocity, and frequency; and (3) laser radiation levels used in each effect.

## **PART 15**

### **NOTIFICATION PROCEDURES**

- 15.1 What procedures are followed for notification of appropriate Federal (CDRH, FAA), State, and local agencies?

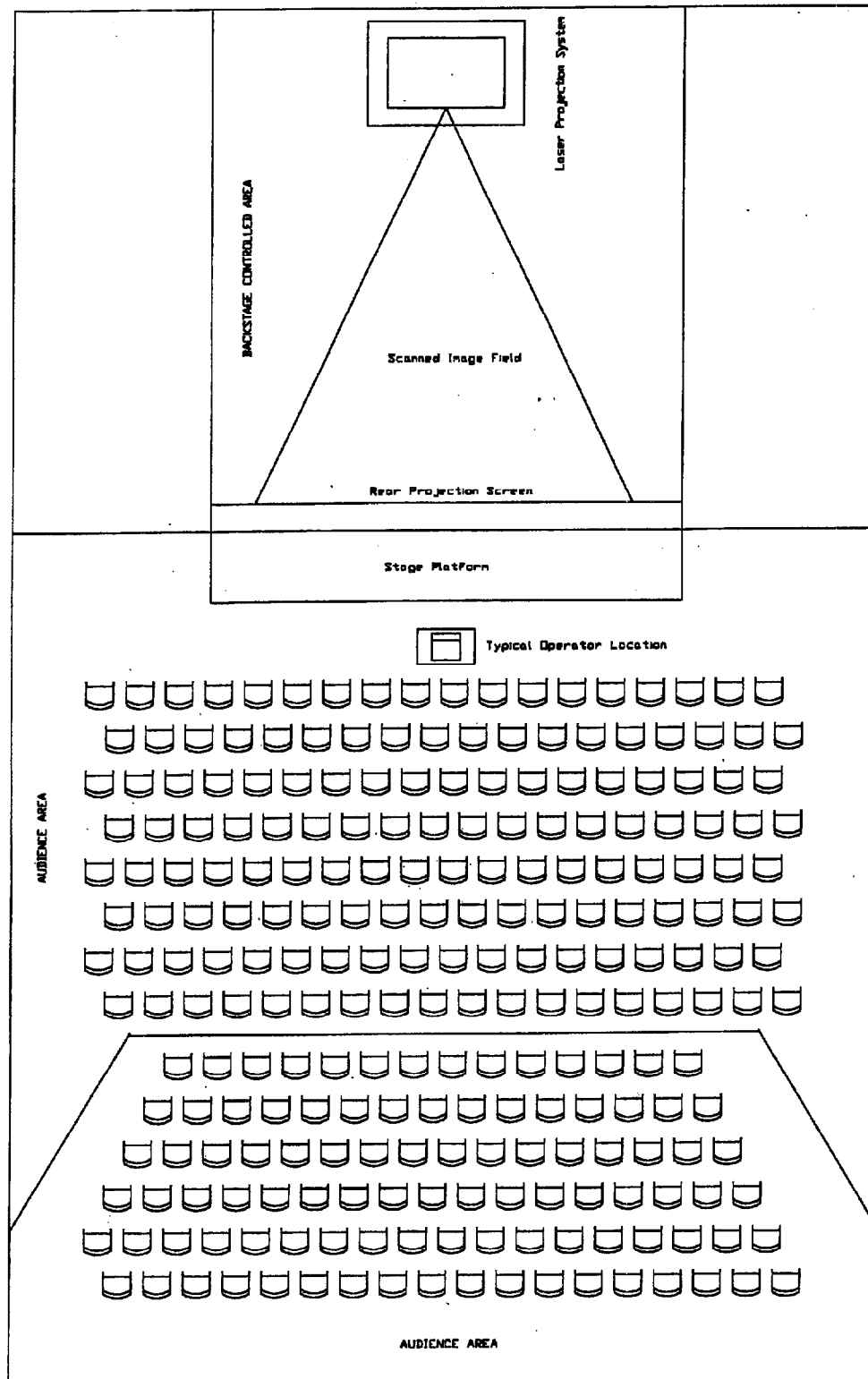
**SEE ATTACHMENT TO PART 15.1**

Procedures and/or form letters attached? ☒ Yes ☐ No (If "No," explain. why)

- 15.2 What Federal, State, or local agencies are notified or 'would be notified? List of agencies attached: ☒ Yes ☐ No (If "No," explain why)

**SEE ATTACHMENT TO PART 15.2**

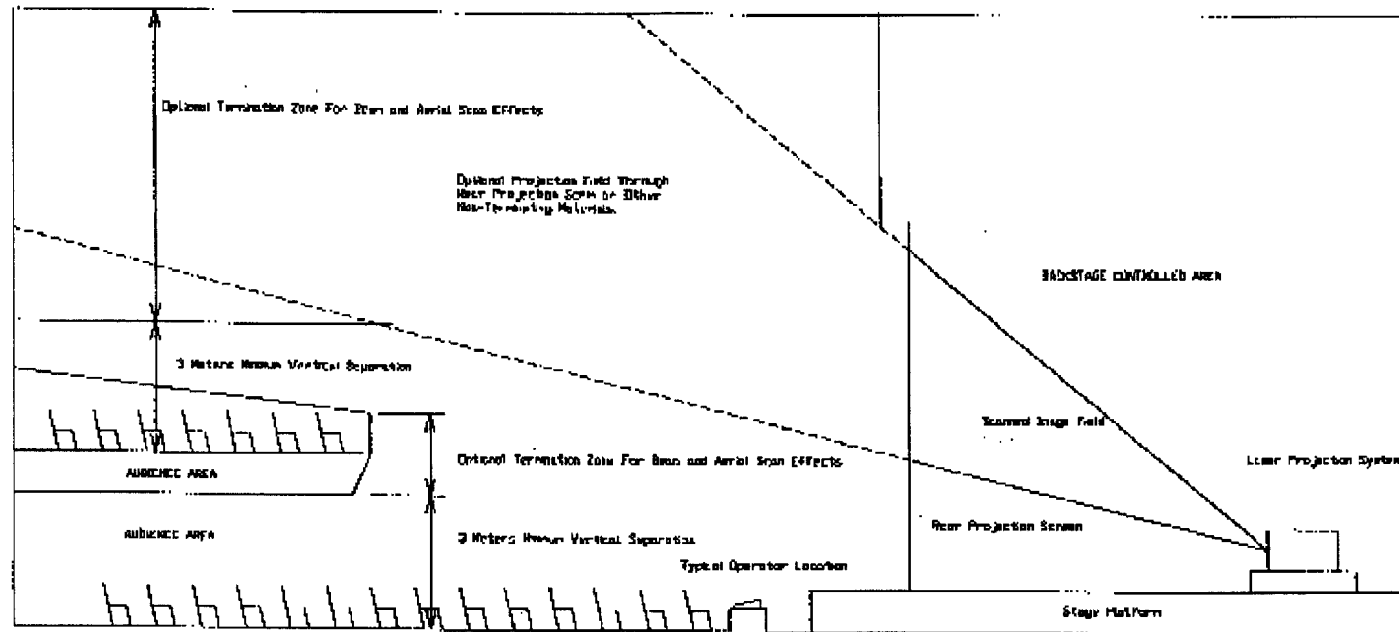
## Attachment to Part 9.1

[illegible]



# ATTACHMENT TO PART 9.1

TYPICAL INDOOR REAR PROJECTION CONFIGURATION - ELEVATION VIEW



FORM 10-1000000-1000000				REV	
REVISIONS				DATE	
NO.	DATE	BY	REASON	DATE	BY
1	10/10/10	ABC	REVISION	10/10/10	ABC
2	10/10/10	DEF	REVISION	10/10/10	DEF
3	10/10/10	GHI	REVISION	10/10/10	GHI
4	10/10/10	JKL	REVISION	10/10/10	JKL
5	10/10/10	MNO	REVISION	10/10/10	MNO
6	10/10/10	PQR	REVISION	10/10/10	PQR
7	10/10/10	STU	REVISION	10/10/10	STU
8	10/10/10	VWX	REVISION	10/10/10	VWX
9	10/10/10	YZA	REVISION	10/10/10	YZA
10	10/10/10	BCD	REVISION	10/10/10	BCD
11	10/10/10	EFG	REVISION	10/10/10	EFG
12	10/10/10	HIJ	REVISION	10/10/10	HIJ
13	10/10/10	KLM	REVISION	10/10/10	KLM
14	10/10/10	NOP	REVISION	10/10/10	NOP
15	10/10/10	QRS	REVISION	10/10/10	QRS
16	10/10/10	TUV	REVISION	10/10/10	TUV
17	10/10/10	WXY	REVISION	10/10/10	WXY
18	10/10/10	ZAB	REVISION	10/10/10	ZAB
19	10/10/10	BCD	REVISION	10/10/10	BCD
20	10/10/10	EFG	REVISION	10/10/10	EFG
21	10/10/10	HIJ	REVISION	10/10/10	HIJ
22	10/10/10	KLM	REVISION	10/10/10	KLM
23	10/10/10	NOP	REVISION	10/10/10	NOP
24	10/10/10	QRS	REVISION	10/10/10	QRS
25	10/10/10	TUV	REVISION	10/10/10	TUV
26	10/10/10	WXY	REVISION	10/10/10	WXY
27	10/10/10	ZAB	REVISION	10/10/10	ZAB
28	10/10/10	BCD	REVISION	10/10/10	BCD
29	10/10/10	EFG	REVISION	10/10/10	EFG
30	10/10/10	HIJ	REVISION	10/10/10	HIJ
31	10/10/10	KLM	REVISION	10/10/10	KLM
32	10/10/10	NOP	REVISION	10/10/10	NOP
33	10/10/10	QRS	REVISION	10/10/10	QRS
34	10/10/10	TUV	REVISION	10/10/10	TUV
35	10/10/10	WXY	REVISION	10/10/10	WXY
36	10/10/10	ZAB	REVISION	10/10/10	ZAB
37	10/10/10	BCD	REVISION	10/10/10	BCD
38	10/10/10	EFG	REVISION	10/10/10	EFG
39	10/10/10	HIJ	REVISION	10/10/10	HIJ
40	10/10/10	KLM	REVISION	10/10/10	KLM
41	10/10/10	NOP	REVISION	10/10/10	NOP
42	10/10/10	QRS	REVISION	10/10/10	QRS
43	10/10/10	TUV	REVISION	10/10/10	TUV
44	10/10/10	WXY	REVISION	10/10/10	WXY
45	10/10/10	ZAB	REVISION	10/10/10	ZAB
46	10/10/10	BCD	REVISION	10/10/10	BCD
47	10/10/10	EFG	REVISION	10/10/10	EFG
48	10/10/10	HIJ	REVISION	10/10/10	HIJ
49	10/10/10	KLM	REVISION	10/10/10	KLM
50	10/10/10	NOP	REVISION	10/10/10	NOP
51	10/10/10	QRS	REVISION	10/10/10	QRS
52	10/10/10	TUV	REVISION	10/10/10	TUV
53	10/10/10	WXY	REVISION	10/10/10	WXY
54	10/10/10	ZAB	REVISION	10/10/10	ZAB
55	10/10/10	BCD	REVISION	10/10/10	BCD
56	10/10/10	EFG	REVISION	10/10/10	EFG
57	10/10/10	HIJ	REVISION	10/10/10	HIJ
58	10/10/10	KLM	REVISION	10/10/10	KLM
59	10/10/10	NOP	REVISION	10/10/10	NOP
60	10/10/10	QRS	REVISION	10/10/10	QRS
61	10/10/10	TUV	REVISION	10/10/10	TUV
62	10/10/10	WXY	REVISION	10/10/10	WXY
63	10/10/10	ZAB	REVISION	10/10/10	ZAB
64	10/10/10	BCD	REVISION	10/10/10	BCD
65	10/10/10	EFG	REVISION	10/10/10	EFG
66	10/10/10	HIJ	REVISION	10/10/10	HIJ
67	10/10/10	KLM	REVISION	10/10/10	KLM
68	10/10/10	NOP	REVISION	10/10/10	NOP
69	10/10/10	QRS	REVISION	10/10/10	QRS
70	10/10/10	TUV	REVISION	10/10/10	TUV
71	10/10/10	WXY	REVISION	10/10/10	WXY
72	10/10/10	ZAB	REVISION	10/10/10	ZAB
73	10/10/10	BCD	REVISION	10/10/10	BCD
74	10/10/10	EFG	REVISION	10/10/10	EFG
75	10/10/10	HIJ	REVISION	10/10/10	HIJ
76	10/10/10	KLM	REVISION	10/10/10	KLM
77	10/10/10	NOP	REVISION	10/10/10	NOP
78	10/10/10	QRS	REVISION	10/10/10	QRS
79	10/10/10	TUV	REVISION	10/10/10	TUV
80	10/10/10	WXY	REVISION	10/10/10	WXY
81	10/10/10	ZAB	REVISION	10/10/10	ZAB
82	10/10/10	BCD	REVISION	10/10/10	BCD
83	10/10/10	EFG	REVISION	10/10/10	EFG
84	10/10/10	HIJ	REVISION	10/10/10	HIJ
85	10/10/10	KLM	REVISION	10/10/10	KLM
86	10/10/10	NOP	REVISION	10/10/10	NOP
87	10/10/10	QRS	REVISION	10/10/10	QRS
88	10/10/10	TUV	REVISION	10/10/10	TUV
89	10/10/10	WXY	REVISION	10/10/10	WXY
90	10/10/10	ZAB	REVISION	10/10/10	ZAB
91	10/10/10	BCD	REVISION	10/10/10	BCD
92	10/10/10	EFG	REVISION	10/10/10	EFG
93	10/10/10	HIJ	REVISION	10/10/10	HIJ
94	10/10/10	KLM	REVISION	10/10/10	KLM
95	10/10/10	NOP	REVISION	10/10/10	NOP
96	10/10/10	QRS	REVISION	10/10/10	QRS
97	10/10/10	TUV	REVISION	10/10/10	TUV
98	10/10/10	WXY	REVISION	10/10/10	WXY
99	10/10/10	ZAB	REVISION	10/10/10	ZAB
100	10/10/10	BCD	REVISION	10/10/10	BCD

## Equipment Setup Checklist

Setup Show 1 Show 2 Show 3

Show Date:

Show Name:

### Basic Safety:

- 1 All protective covers properly fit and secured
- 2 Covers are adequate to prevent access to excessive radiation
- 3 Beam Masking in place to prevent undesired exposure to laser radiation
- 4 Laser Scatter is adequately controlled to prevent excessive radiation levels
- 5 All beam shutters operating properly
- 6 Key switch(es) functional
- 7 Emission indicator functional
- 8 Emission delays operating
- 9 Check interlocks
- 10 Intercrew Communication systems checked and functioning properly
- 11 Safety Spotters in place viewing laser output, audience and aircraft
- 12 Check function of manual reset system on exciter
- 13 Check remote interlock connector and function


### Projector Label Verification:

- 1 Manufacturer's Certification Label
- 2 Show/Performance Manufacturer's Identification Label
- 3 Warning Logotype
- 4 Aperture labels
- 5 Emission Indicator labels
- 6 Non-Interlock label (if applicable)
- 7 Defeatable Interlock label (if applicable)


### Other Safety Feature Verification:

- 1 Warning labels posted throughout venue
- 2 Laser safety area(s) secure
- 3 Beams no closer to audience than 3 meters vertical
- 4 Beams no closer to audience than 2 meters horizontal


### Alignment:

- 1 Only qualified personnel - no audience present
- 2 Beam targets - no audience present
- 3 All targets secured in place
- 4 Laser energized and projector alignment with lowest laser power possible
- 5 Energized laser with shutter closed
- 6 All power levels determined and recorded
- 7 Check scan test pattern
- 8 Any problems found?


### Inspections:

- 1 Was there a State Inspection at this performance?
- 2 Any State violations observed?
- 3 If so, were they resolved?
- 4 Was there a CDRH Inspection at this performance?
- 5 Any CDRH violations observed?
- 6 If so, were they resolved?


**Attachment to Part 14.1**

**DAILY PERFORMANCE LIST  
LASER LIGHT SHOW**

**Show Date:** \_\_\_\_\_

**Show Time:** \_\_\_\_\_

**Operator:** \_\_\_\_\_

**Venue Name:** \_\_\_\_\_

**Venue Location:** \_\_\_\_\_

**All items must be brought into a satisfactory state prior to the operation / or being checked off. If an item fails to meet performance standards consult your supervisor. Do not attempt to run any show with any deficiency in performance standards. Include power levels, and remedies for any potential CDRH violations use reverse side if necessary.**

## **Attachment to Part 15.1**

### **STATE NOTIFICATIONS**

**Most states require notification concerning shows taking place within their borders. Requirements for notifications vary widely so it is wise to check with the proper authority. To reach the proper authority contact:**

**Sean Boyd (301) 594-4654**

**The responsibility to contact the state authority is that of the manufacturer Company Name Here.**

**For the following states: California, Nevada, Washington, Idaho, Montana, Arizona, Hawaii, and Alaska contact**

**Gary Zaharek, EOS FDA (HFR-PA1530) 96 N Third Street, San Jose, CA 95112, (408) 291-7549  
Fax (409) 291-7228**

**For Texas:**

**Texas Department of Health, Bureau of Radiation Control, 1100 West 49<sup>th</sup> St., Austin, TX  
78756-3199 Phone (512) 834-6688 Fax (512) 834-6690**

## **Attachment to part 15.1**

**Notification to State, Federal, and Local, Officials will be no less than 2 weeks whenever possible. FAA Notifications will be 4 to 6 weeks. In the case of less than one (1) week notice, notification will be sent by fax to CDRH and appropriate authorities.**

## **Attachment to Part 15.2**

**For States:**

**ME, NH, MA, NY, CT, RI**

**Max Lager, EOS  
FDA (HFR-NE25)  
1 Montvale Avenue  
Stomcham, MA 02180.3542**

**(617) 279-1675 ext 154  
279-1742.Fax**

**For States:**

**NJ, DE, MD, VA, TN, NC, SC, GA, FL, PR, MS, LA**

**Dennis Butcher, EOS  
FDA, (HFR-SE18)**

**(404) 347-3576 ext 5259  
347-4349 Fax**

**For States:**

**PA, WV, KY, OH, IL, MI, WI, MN, ND, SD**

**James E, Frye, EOS  
FDA, (HFR-MA450)  
1141 Central Parkway  
Cincinnati, OH 45202**

**(513) 684-3505  
684-2905 Fax**

**For States**

**IA, MO, AR, NE, KS, TX, WY, CO, NM, UT**

**Tom Goertz  
FDA, Southwest Region (HFR-SW14)  
7920 Elmbrook, Suite 102  
Dallas, TX 75247**

**(204) 655-8100 ext 141  
655-8130 Fax**

**For States**

**AZ, Southern California**

**Ralph L, Kirch, Engineer  
FDA, (HFR-PA2530)  
4615 E, Elwood Street, Room 200  
Phoenix, AZ 85040**

**(602) 379-4595 Ext 224**

**Backup for Los Angeles**

**Serrah Namini, EOS  
FDA (HFR-PA2545)  
18004 Skypark Circle, Suite 140  
Irvine, CA 92714**

**(714) 836-2377  
836-2878 Fax**

**For States:**

**CA, NV, MT, ID, OR, WA, AK, HI**

**Gary Zaharek, EOS  
FDA (HFR-PA1530)  
96 N Third Street  
San Jose, CA 95112**

**(408) 291-7549  
291-7228 Fax**